

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US04/36689

A. CLASSIFICATION OF SUBJECT MATTER DPC(8) : C12Q 1/70 US CL : 435/5 According to International Patent Classification (TPQ or to both national classification and IPC)																	
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 435/5 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet																	
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>THEL et al. Mechanisms and enzymes involved in SARS coronavirus genome expression. Journal of General Virology, 19 June 2003, Vol. 84, ppages 2305-2315, see Figure 1d.</td> <td>1, 2</td> </tr> <tr> <td>X</td> <td>SNIJDER et al. Unique and Conserved Features of Genome and Proteome of SARS-coronavirus, an Early Split-off From the Coronavirus Group 2 Lineage. Journal of Molecular Biology. 20 August 2003, vol. 331, pages 991-1004, see Figure 3B.</td> <td>1, 2</td> </tr> <tr> <td>X</td> <td>YOUNT et al. Reverse Genetics with a full-length infections cDNA of severe acute respiratory syndrome coronavirus. PNAS. 20 October 2003. Vol. 100, no. 22, pages 12995-13000, see page 12997-8 and Figure 2B.</td> <td>1-4</td> </tr> <tr> <td>A</td> <td>KSIAZEK et al. A Novel Coronavirus Associated with Severe Acute Respiratory Syndrome. New England Journal of Medicine. 10 April 2003. Vol. 348, npo. 20, pages 1953-1966, see page 1954.</td> <td>18-23</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	THEL et al. Mechanisms and enzymes involved in SARS coronavirus genome expression. Journal of General Virology, 19 June 2003, Vol. 84, ppages 2305-2315, see Figure 1d.	1, 2	X	SNIJDER et al. Unique and Conserved Features of Genome and Proteome of SARS-coronavirus, an Early Split-off From the Coronavirus Group 2 Lineage. Journal of Molecular Biology. 20 August 2003, vol. 331, pages 991-1004, see Figure 3B.	1, 2	X	YOUNT et al. Reverse Genetics with a full-length infections cDNA of severe acute respiratory syndrome coronavirus. PNAS. 20 October 2003. Vol. 100, no. 22, pages 12995-13000, see page 12997-8 and Figure 2B.	1-4	A	KSIAZEK et al. A Novel Coronavirus Associated with Severe Acute Respiratory Syndrome. New England Journal of Medicine. 10 April 2003. Vol. 348, npo. 20, pages 1953-1966, see page 1954.	18-23
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D Further documents are listed in the continuation of Box C.		D See patent family annex.															
Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, exhibition or other means "T" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to persons skilled in the art "&" document member of the same patent family															
Date of the actual completion of the international search 04 January 2006 (04.01.2006)		Date of mailing of the international search report 07 FEB 2006															
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Mary E. Mosher, PILD. Telephone No. 571-272-1600															

INTERNATIONAL SEARCH REPORT

International ~~Application~~
PCT/US04/3660x

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group 1, claim(s) 1-4, 18-23, drawn to detecting replication of SARS virus using PCR to detect subgenomic RNA

Group 2, claim(s) 6-17, drawn to detecting presence of virus using cultured cells.

Group 3, claim(s) 24-35, drawn to identifying test agent by detecting altered replication.

Group 4, claim(s) 36-39, drawn to antibody.

Group 5, claim(s) 40, 52-54, drawn to composition comprising cells and protease inhibitor.

Group 6, claim(s) 41-47, drawn to method of use of cells with protease inhibitor.

Group 7, claim(s) 48-51, drawn to detecting replication of a coronavirus.

Group 8, claim(s) 55, drawn to method of inhibiting coronavirus 229E.

Group 9, claim(s) 56-60, 62, 64, 66, drawn to kit comprising primers and instructions.

The inventions listed as Groups 1-8 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

PCT article 17 (3)(a) states that "The International Searching Authority shall establish the international search report on those parts of the international application which relate to the invention first mentioned in the claims (main invention) and, provided the required additional fees have been paid within the prescribed time limit, on those parts of the international application which relate to inventions in respect of which the said fees were paid." PCT Rule 13.2 states that "The expression 'special technical features' shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art."

For group 1, the invention first mentioned in the claims, the special technical feature is the detection of SARS subgenomic RNA using PCR, to detect replication of the virus.

Group 2 is drawn to a method of detecting virus, not necessarily detecting replication, and does not require the corresponding special technical feature, as evidenced by claims 8 and 9.

Group 3 is drawn to a screening assay for agents altering replication. It does not require the special technical feature of group 1, as evidenced by claims 28 and 29, or provision of a sample for detection of virus or detection of virus as required in group 2.

Group 4 is unrelated to groups 1-3, being drawn to a product-by-process antibody that is indistinguishable from antibodies produced by a different process.

Group 5 does not relate to any of the special technical features of groups 1-4, being drawn to a composition of cells + protease inhibitor.

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Box No. π Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ 12SJ Claims Nos.: 5,61,63,65 and 67
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
These claims are unsearchable because they require particular SEQ IDs, and no Sequence Listing was filed.
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. UI Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-4 and 18-23

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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Group 6 is a method of use of the group 5 composition, which does not require the special technical features of groups 1-4.
Group 7 does not require the special technical feature of group 1, because it does not require detection of SARS replication as evidenced by claim 51.
Group 8 is unrelated to groups 1-7, being drawn to a method of inhibiting a virus different from that of groups 1-4, and having no stated relationship to the products of group 5 or the methods of groups 6-7.
Group 9 is drawn to a kit comprising two coronavirus primers and instructions, but does not require the primers to detect SARS as required in group 1.

Continuation of B. FIELDS SEARCHED Item 3:

EAST USPAT, PG PUB, EPO, JPO, DERWENT; Dialog files 155, 5, 50, 357. Search terms:
SARS, SCOV, HSCOV, ANTIVIRAL, SCREEN?, REPUCAT?, anti adj viral, REPUCAT?, INHIBIT?, VIRUS, SCREEN?, ASSAY,
CORONA?, SUBGENOM?, DETECT?, DIAGNOS?, AMPLIF?, LEADER, HEK, HUH, MVILU, PRIMARY, KIDNEY, 293, 293T,
CELL, CELLS, PY=2003, PERSIST?, CPE, CYTOPATHIC, PERMISSIVE, RANGE, INFECT?, LINES, CULTURED, per , prhmk